ØLTRONIX

USER'S MANUAL

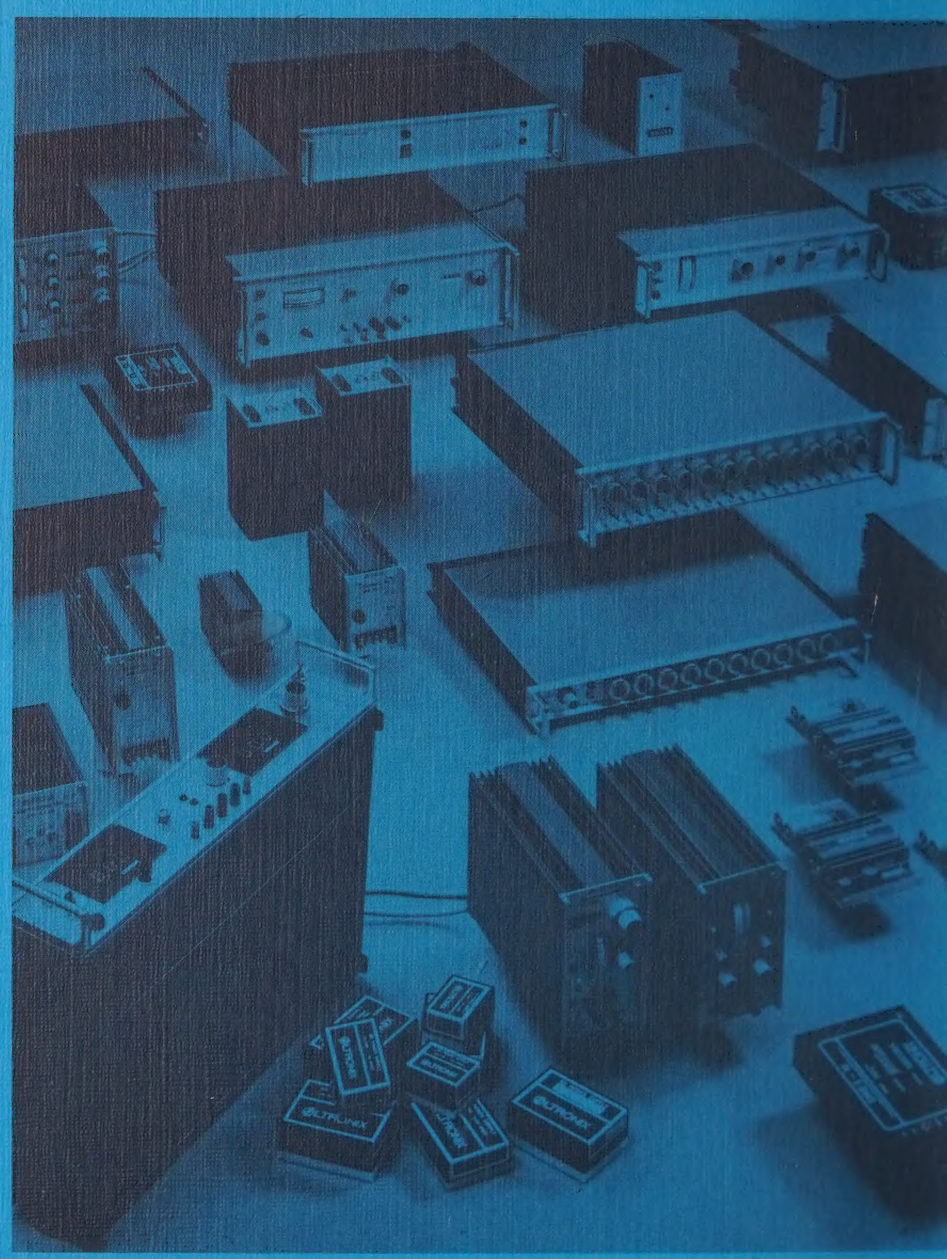
REGULATED POWER SUPPLY

LABPAC 100

TABLE AND RACK

MODELS

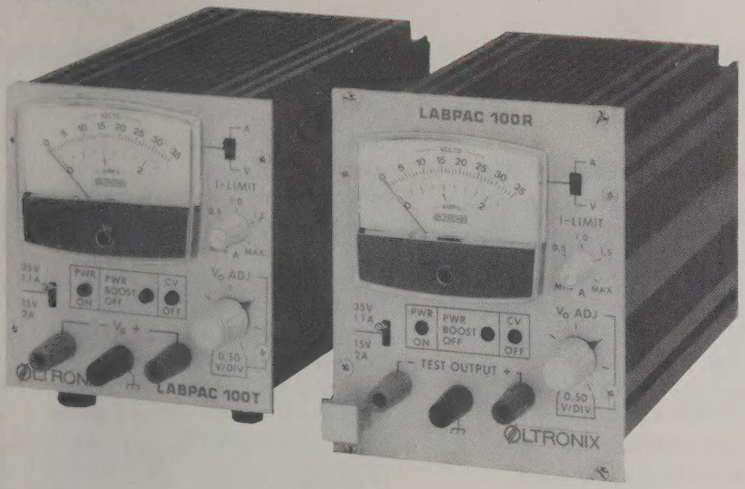
ENGINEERING FACILITIES
MP MASTER
MA23766



Congratulations to your recent purchase of a high quality power supply! Stay in touch with us! We can help solve your power supply needs - standard units or specials.

"O" LAB

LABPAC 100



This high quality, low cost laboratory supply is a powerful addition to the OLTRONIX LABPAC line.

It is available in a tabletop version for bench use or in a rack version for use in a standard eurocard rack, occupying a width of 21TE, in accordance with DIN 41494, part 5.

* TWO OUTPUT RANGES: 0–15V AND 0–35V
* OUTPUT CURRENT: UP TO 2A WITH POWER BOOST
* EXCELLENT PERFORMANCE CHARACTERISTICS
* VDE CLASS II SAFETY TYPE TRANSFORMER (VDE 0551)
* HIGH RFI/EMI NOISE IMMUNITY
* TEN TURNS POTENTIOMETER FOR ACCURACY AND RESOLUTION
* ADJUSTABLE CONSTANT CURRENT LIMIT
* LARGE MIRROR SCALE PANEL METER
* LED OPERATION MODE INDICATORS
* SHORT CIRCUIT PROTECTED
* HIGH POWER – SMALL SIZE: 20W/LITER
* OLTRONIX 2 YEAR WARRANTY

SPECIFICATIONS: [1]	LABPAC 100T	LABPAC 100R
SOURCE VOLTAGE (U_S)	220 or 240VAC ± 10% internally selectable [2]	
SOURCE FREQUENCY	48-63Hz	
SOURCE CURRENT	Max. 0,64A_{rms} (in power boost)	
FUSE	0,8A slow	
AMBIENT OPERATING TEMPERATURE	0-40°C at full rating; 40-80°C, derate output current 2,5% /°C	
STORAGE TEMPERATURE	-40 to +85°C	
OUTPUT ADJUSTMENT RANGE		
– VOLTAGE	0-15V, 0-35V	
– CURRENT	0,05-2A	
OUTPUT VOLTAGE/CURRENT	See Fig. 4, page 5.	
SOURCE EFFECT, U_{Snom} ± 10%	< 1mV; < 1mA	
LOAD EFFECT, $0 \leq I_o \leq 100\%$	< 2mV	
$0 \leq V_o \leq 100\%$	< 3mA	
TEMPERATURE COEFFICIENT, 0-40°C	V_o: < 0,01% /°C; I_o: < 0,02% /°C	
PARD (Ripple and noise), 20Hz-20MHz	< 2mV_{pp}; < 2mA_{pp}	
LONG TERM DRIFT, 8 hours, 0-20Hz	V_o: < 0,05%; I_o: < 0,1%	
LOAD TRANSIENT RECOVERY TIME I_o = 0-100%-0, U_S = 220V Recovery band = ± 50mV	< 50us	
OUTPUT IMPEDANCE	1mΩ, 0,5µH	
CROSSOVER AREA	Max. 20mV/3mA	
REVERSE VOLTAGE PROTECTION	Max. 1V (One diode drop)	
REVERSE CURRENT PROTECTION	Max. 2A	
OUTPUT ISOLATION VOLTAGE – OUTPUTS TO CASE	> 100M (U_{test} = 500VDC)	
OUTPUT ISOLATION VOLTAGE – OUTPUTS TO CASE	500VDC	
ISOLATION TEST VOLTAGE – MAINS TO TRAFO SECONDARY – MAINS TO OUTPUTS (AND CASE)	5,6kVDC 3,2kVDC	
FRONTPANEL HEIGHT	111mm	128,4mm
FRONTPANEL WIDTH	104mm	106,3mm (21TE)
CASE DEPTH	172mm	-
DEPTH - FRONTPANEL INSIDE TO CONNECTOR PLANE	-	175,2mm
INSERTION GUIDE CENTERS	-	101,6mm (20TE)
MASS	2,4kg	2,2kg

DIN 41494

1) Specifications expressed in accordance with international recommendations, notably IEC-478.

2) Factory connected for 220V unless otherwise ordered.

HOW TO USE YOUR LABPAC 100

Please read the following paragraphs carefully, they will enable you to make the best use of your LABPAC.

1 – LINE INPUT.

LABPAC 100 T: This is the table-top version and it is equipped with a power cord and plug with protective grounding. See Fig. 1. The VDE approved line switch is located on the rear panel and the green LED "PWR ON", on the front panel, indicates power on or off.

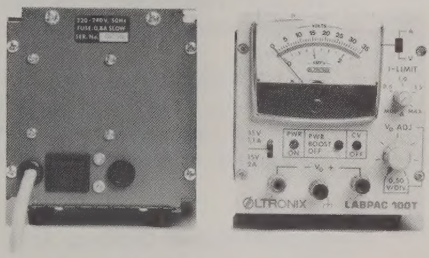


Fig. 1: LABPAC 100T

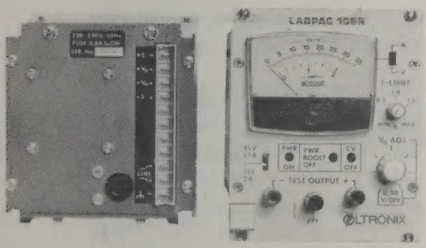


Fig. 2: LABPAC 100R

LABPAC 100 R: Fig. 2 shows the eurorack version of the LABPAC 100. Its rack connector (DIN 41612, Bauform H11), on the rear panel, has pins no 26, 29 and 32 assigned to line input high, low and protective ground respectively.

Both versions of the LABPAC 100 are equipped with a high quality safety transformer (VDE 0551, class II) – factory connected for 220V operation. When required, the unit may be connected for 240V operation as shown in Fig. 5.

The line fuse, 0,8A slow, is located in a VDE approved fuse holder on the rear panel.

2 – OUTPUT CHARACTERISTICS.

The output characteristic chart, shown in Fig. 4, gives the guaranteed operating area and limits for the output voltage versus output current of the LABPAC 100.

1 – Output Current Range.

The chart shows that in the 15V and 35V ranges the unit can deliver a constant current of 1A from 0 to 17,5V and 0,5A from 0 to 35V respectively.

The LABPAC 100 has a foldback characteristic to allow for higher output currents. Thus, for example, in the 15V range a constant current of 2A can be delivered between 10 and 15V, and in the 35V range a constant current of 1A is available within the range of 20 to 35V.

2 – Voltage / Current Crossover Area.

The crossover area, when changing between constant voltage/current, is a function of the voltage and current settings. The size of this area, see Fig. 3, is maximum 20mV and 3mA.

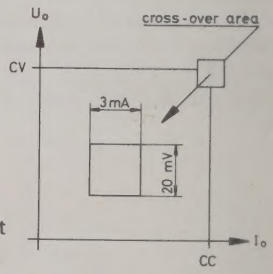


Fig. 3: Voltage/Current Crossover Area.

3 – Power Boost.

An output current considerably higher, than that rated for continuous use, can be allowed provided the temperature of internal components is held within safe limits.

The POWER BOOST, an OLTRONIX pioneered feature, allows up to twice the rated (continuous) output current, see Fig. 4. When the temperature limit, for safe component operation, is approached the unit will automatically limit the output current to the rated (continuous) value. The power boost is of particular interest in pulsed load applications. Whenever the power boost is not available the LED "PWR BOOST OFF" will be lit.

4 – Short Circuit Protection.

The output of the LABPAC 100 power supply can be short circuited indefinitely, without harm. The short circuit current is a function of the setting of the current limit potentiometer "I-LIM" and the position of the range selector switch. As shown in Fig. 4 the short circuit current is for range:

0–15V: approx 1A max. or as determined by the setting of "I-LIM"
0–35V: approx 0,5A max. or as determined by the setting of "I-LIM".

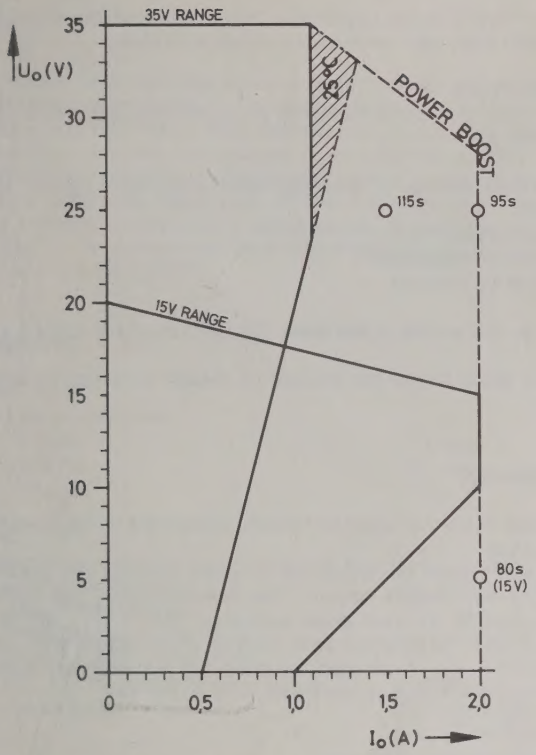


Fig. 4: Output Characteristic Chart.
Time values shown indicate typical duration in POWER BOOST at 25°C ambient.

3 – VOLTAGE AND CURRENT MONITORING

The LED "CV-OFF" indicates output voltage or output current in the following way:

1 – "CV-OFF" is not lit when the unit is operating in constant voltage mode.

2 – "CV-OFF" is lit when the unit is operating in constant current or in current fold-back mode
or
it may be lit when operating outside of the loci of the output characteristic chart (see Fig. 4).

The slide switch "V-A", in the upper right hand corner of the front panel, selects the quantity displayed on the panel meter as follows:

3 – **Slide switch in pos. "V":**
Output voltage is displayed when in constant voltage mode or during current foldback
or
the compliance voltage is displayed when in constant current mode.

4 – **Slide switch in Pos. "A":**
Output current is displayed:
as demanded by the load
or
as limited by the setting of the knob "I-LIM" (constant current mode)
or
in foldback mode where the amount of current is limited by internal circuitry.

4 – OUTPUT TERMINALS.

The output voltage is on the tabletop version, connected to the front panel binding posts marked "+" and "–".
On the rack version these binding posts serve as test outputs and should not be used to supply any output current. The true output of the LABPAC 100R is brought out to the rear panel connector pins 5 (+) and 8 (–). The rack version only, is provided with remote sense inputs available on pins 2 (+ S) and 11 (–S). If not used the sense inputs should be connected to the output (pin 2 connected to pin 5 and pin 8 to pin 11).

5 – REVERSE VOLTAGE PROTECTION.

The output is fully protected against reverse voltage for currents of up to 2A. The max. reverse voltage drop at the two terminals is 1V (forward voltage drop of one diode).

6 – ELECTRICAL NOISE IMMUNITY.

Special care has been taken in the design of the LABPAC 100 to improve the immunity to exterior RFI/EMI noise.

7 – OUTPUT ISOLATION.

The output is fully isolated from the chassis as well as from the line voltage. Either one of the output terminals may therefore be connected to ground or to a common potential of up to 500 VDC.

8 – COOLING.

Both the rack and table top versions feature a high power density, i.e. low volume versus output power. The necessary cooling is obtained by natural convection and thus the air flow thru the case must not be obstructed.
The maximum ambient temperature is, as specified, +40°C. This is usually not a limitation for a laboratory power supply, except if placed on top of other heat generating equipment. If this is the case make sure that the allowable ambient temperature is not exceeded. Should ambient temperatures above +40°C be encountered then the allowable output current should be derated at a rate of 2,5%/°C.

9 – DIMENSIONS.

LABPAC 100T:
The case dimensions are:

height:	111 mm
width:	104 mm
depth:	172 mm

LABPAC 100R:
The dimensions conform to eurocard rack standard (DIN 41494):

front panel width:	106,3 mm (21TE)
front panel height:	128,4 mm
insertion quide centers:	101,6 mm (20TE)
depth - front panel inside to rack connector plane:	175,2mm
mating rack connector:	DIN 41612, Bauform H11 (e.d. ERNI STV-P-311)

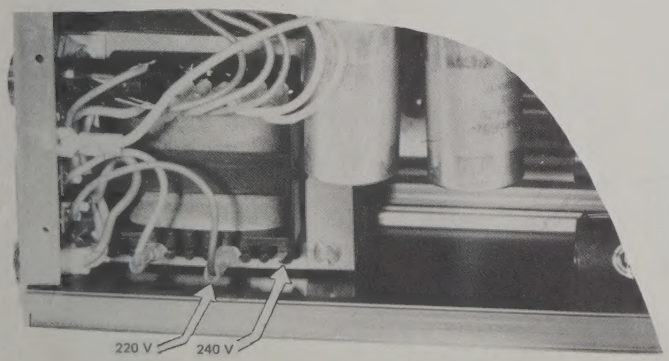
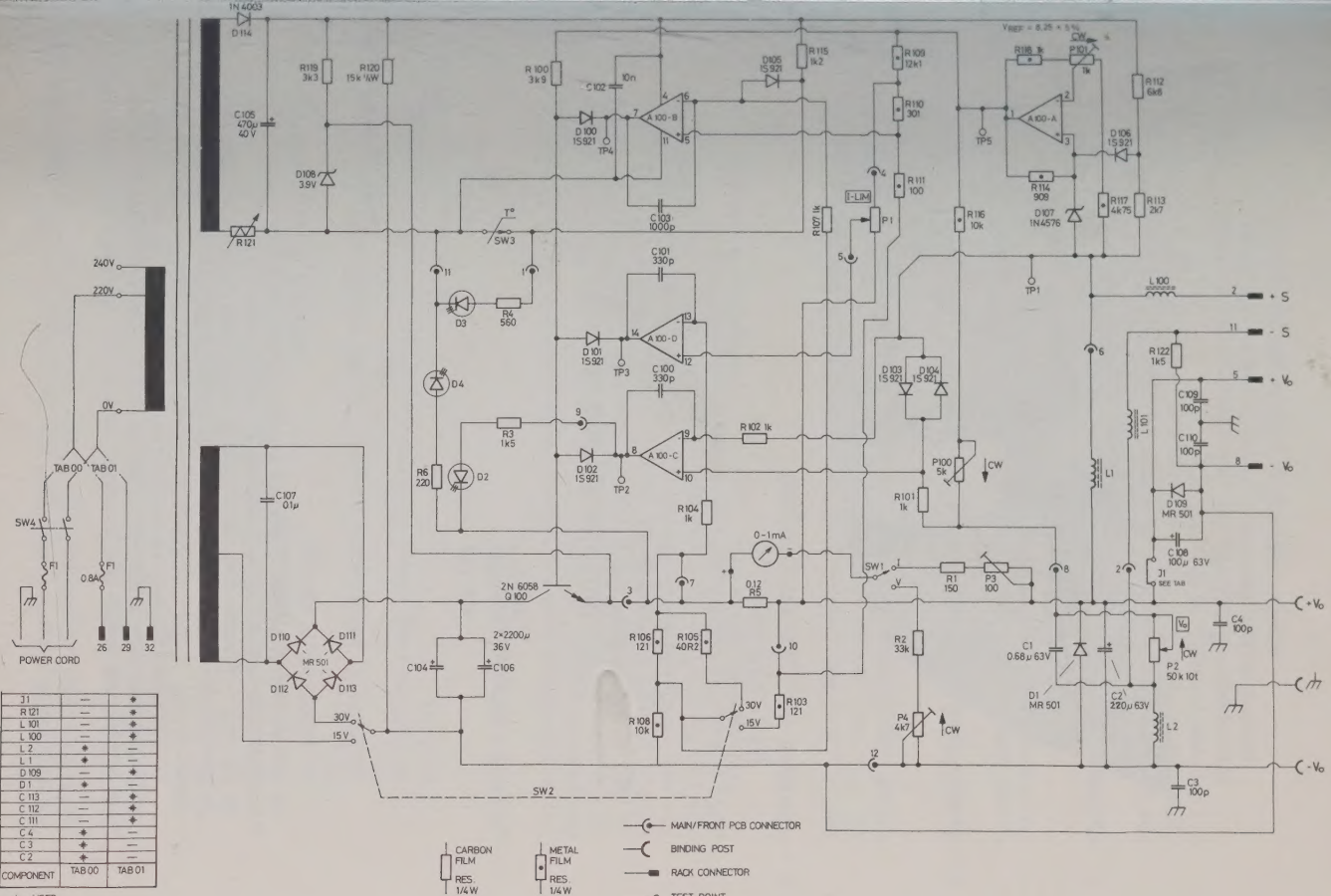


Fig. 5: With the bottom plate removed, 220 or 240V operation is selected by connecting brown wire with fast-on to transformer tab 220 or 240V as indicated in figure.



J1	—	◆
R 121	—	◆
L 101	—	◆
L 100	—	◆
L 2	◆	—
L 1	◆	—
D 109	—	◆
D 1	◆	—
C 113	—	◆
C 112	—	◆
C 111	—	◆
C 4	◆	—
C 3	◆	—
C 2	◆	—
COMPONENT	TAB 00	TAB 01

◆ = USED
— = NOT USED

CARBON FILM RES. 1/4 W

METAL FILM RES. 1/4 W

MAIN/FRONT PCB CONNECTOR

BINDING POST

RACK CONNECTOR

TEST POINT

2–YEAR WARRANTY

We warrant each instrument manufactured by us, and sold by us or our authorized agents, to be free from defects in material and workmanship and that it will perform within applicable specifications for a period of five years after original shipment. Our obligations under this guarantee are limited to repairing or replacing any instruments or parts thereof, which shall, within 2 years after delivery to the original purchaser, be returned to us with transportation charges prepaid, prove after our examination to be thus defective. Excluded are those components, which are not covered by a corresponding manufacturers guarantee or have been misused or accidentally damaged.

We reserve the right to discontinue instruments without notice, and to make modifications at any time without incurring any obligations to make such modifications to instruments previously sold.

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